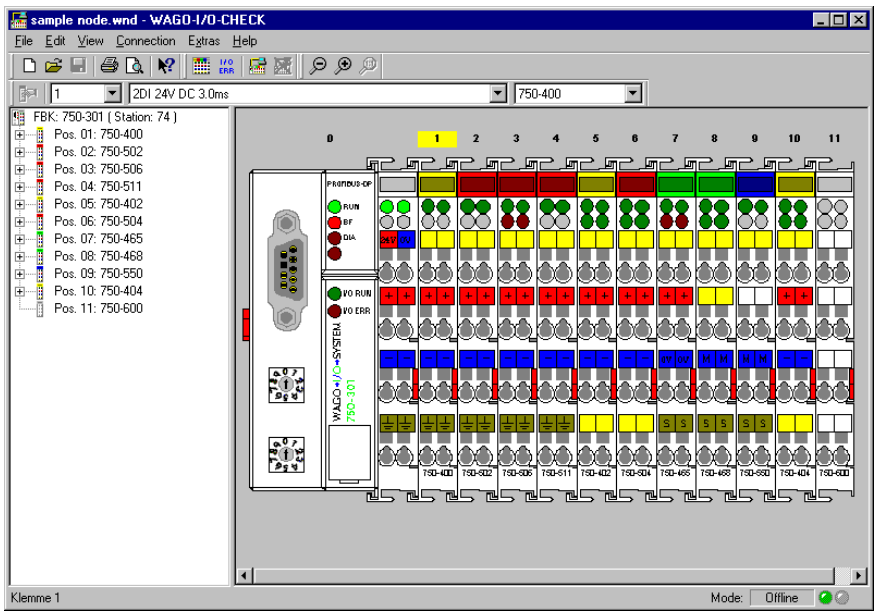
WAGO I/O SYSTEM 759

# WAGO-I/O-*CHECK*




## User Manual

Installation, Test and Start-up Functions

759-121/000-002
Version 1.0.1

WAGO®
INNOVATIVE CONNECTIONS

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Every conceivable measure has been taken to ensure the correctness and completeness of this documentation. However, as errors can never be fully excluded we would appreciate any information or ideas at any time.

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# Review

## Scope of Delivery

**WAGO-I/O-*CHECK*** comprises of the following components:

| | | |
|---|---|---|
| • 1 pc user manual, English | Order No.: | 759-121/000-002 |
| • 1 pc communication cable | Order No.: | 750-920 |
| • 2 pcs installation disks | | |
| • 1 pc Software Licence Agreement | | |
| **= Start-up tool BR 750** | **Order No.:** | **759-300/000-002** |

## Details in the User Manual

This user manual documents the installation, functions and operation of **WAGO-I/O-*CHECK***.

### Concept

Chapter **Review** of this user manual provides a review of the use and possibilities of **WAGO-I/O-*CHECK*.**

The chapter **Start** contains a brief description of how to install and uninstall **WAGO-I/O-*CHECK*** on your PC.

Finally, chapter **Operation** explains the menus, the toolbars and the dialogues available to you to proceed with the installation on your screen.

The chapter **Node testing with WAGO-I/O-*CHECK*** shows you how to test your fieldbus nodes with this start-up tool.

The **Glossary** contains important terms and abbreviations of the **WAGO-I/O-SYSTEM *750*.**

The **Index** contains page numbers where the different key words appear.

This user manual does not detail the typical Windows menus and commands. For help information to the general Windows surface, please refer to the pertinent Windows manuals or Windows Online Help.

## Terms and Definitions

This user manual uses the following abridged terms and definitions:

| Term/Definition | Abridged form |
|---|---|
| Fieldbus node | Node |
| Fieldbus coupler | Coupler |
| Programmable fieldbus controller | Controller |

These terms are explained in the glossary. Mentioning a coupler automatically implies the controller. Certain functions which are exclusively valid for the coupler or especially for the controller mention this fact.

## Symbols

Texts of special importance are characterised by the following symbols and additions:

Characterises important information for you to take into account for a smooth start-up of your **WAGO-I/O-*CHECK***.

**Note:** Note characterises useful tips and information for you to use when starting up **WAGO-I/O-*CHECK***.

## Font Conventions

**Bold:** Instructions relating to the execution of actions and important expressions are **bold**.

*italic* Names of paths and files are identified in italic.

| A vertical line between two names characterise the selection of a menu point from a menu.
e. g.: `File|New`

< > Entries via the keyboard are within pointed brackets.
e. g.: < F5 >

`Courier` Menu points and names on command buttons are printed in the `Courier` font.
e. g.: `OK`

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# WAGO-I/O-*CHECK*

## Application

**WAGO-I/O-*CHECK*** is an easy to use Windows application to operate and represent a node from the **WAGO-I/O-SYSTEM *750*** without the need to connect the node to a fieldbus system.

**WAGO-I/O-*CHECK*** was developed to be able to address individual nodes during the start-up phase without having to rely on an active fieldbus system.

**WAGO-I/O-*CHECK*** works with most components of the **WAGO-I/O-SYSTEM *750*** independent of the coupler used.

## Function

**WAGO-I/O-*CHECK*** reads the configuration of a connected node from the coupler and displays the node on the screen of your PC. The graphical representation of the node can be printed out together with a configuration list.

**WAGO-I/O-*CHECK*** allows the display and default entry of process data of individual I/O modules.

To ensure the communication between **WAGO-I/O-*CHECK*** and the node, the coupler is connected to a free serial interface (port) of your PC using the communication cable as part of our scope of delivery.

## Warnings

- **Disconnect the node from the active fieldbus prior to processing the process data with WAGO-I/O-*CHECK*.**
  **Depending on the coupler setting, set outputs will be reset or remain set after disconnection.**
- **Outputs manually set with WAGO-I/O-*CHECK* (e.g. for motor contactors or valves) remain set until they are manually reset.**

**Please note that in both cases switching off via the software, e. g. through limit switches, has no effect!**

## Supported Components

**WAGO-I/O-*CHECK*** can be used to test nodes with couplers or controllers from the **WAGO-I/O-SYSTEM *750*** for the following fieldbus systems:

- CAN CAL
- CANopen
- DeviceNet
- INTERBUS
- LIGHTBUS
- LON
- MODBUS
- PROFIBUS

**WAGO-I/O-*CHECK*** allows all coupler or controller and I/O module types from the **WAGO-I/O-SYSTEM *750*** to be used for the representation of a node on the screen and on paper.

Current process data of the following bus terminals blocks can be read out or influenced:

- All digital and analog input and output modules
- Up /Down counter,
  750-404
- Input modules for thermocouples, 750-462, 750-469
- Solid state relay module,
  750-509
- Pulse width output module,
  750-511
- Relay output module,
  750-512, 750-513, 750-514, 750-517
- Supply modules with diagnosis,
  750-610, 750-611

## Non-Supported Components

The following couplers and I/O modules do not permit to influence or read out process data:

- Couplers for digital signals, Profibus DP,
  750-323
- I/O modules for encoders and resolvers,
  750-630, 750-631
- Interface modules,
  750-650, 750-651, 750-653, 750-654

# Start

## System Configuration

Minimum system requirements:

| | |
|---|---|
| **PC** | 486/100 MHz or better |
| | **WAGO-I/O-*CHECK*** is designed to be used on a PC with a 486 processor. We point out, however, that efficient and economic work requires a Pentium processor! |
| **Operating system** | Microsoft Windows 95 or better |
| **Main memory** | Windows 95: 16 MB or<br>Windows NT 4.0: 32 MB |
| | For the graphic representation of the node, we recommend to have your PC equipped with a higher capacity main memory. |
| **Fixed disk storage** | recommended: 10 MB |
| **Monitor** | VGA or better, recommended: Super VGA |
| **Resolution** | Min. 640 x 480, Max. 1024 x 768<br>with a display of 256 colours |
| **Mouse** | required |
| **Floppy disk drive** | 3.5“ |
| **Others** | free serial interface, COM 1 ... 4 |

# Installation

**WAGO-I/O-*CHECK*** comes on installation disks and contains all program files required for the application. Installation of the programs does not differ from the installation method used for most other Windows 95 or Windows NT applications.

How to install **WAGO-I/O-*CHECK***:

1. If Windows 95 or Windows NT are not active, start your operating system now.
2. Insert the installation disk with the Installations disk 1 in your floppy disk drive.
3. Start the Windows Explorer and select the desired floppy disk drive. Start the installation with a double click on the „*Setup.exe*“ file

   or

   select in the `Start` Windows menu the entry `Run` and enter the fixed disk drive and the file name „*Setup.exe*“ in the entry field, e. g. „A:*Setup.exe*“. Start the installation by clicking the `OK` button.
4. Carry out the screen-dialog instructions in order to conduct the installation.

# Uninstall

How to uninstall **WAGO-I/O-*CHECK***:

1. Click on the `Start` symbol in the Windows task bar in order to open the `Start` menu.
2. Select the `Programs` option in the `Start` menu to be able to open the `Programs` folder.
3. Select `Wago*` to open the `Wago*` folder.
4. Select `WAGO-IO-CHECK*` to be able to open the `WAGO-IO-CHECK*` folder.
5. Click on the `WAGO-IO-CHECK uninstall` link
6. Follow the instructions on the screen to uninstall **WAGO-I/O-*CHECK*** from your system.

* or the name you have selected

# Start

**WAGO-I/O-*CHECK*** can be started in one of the following manners:

## Start Menu

1. Click on the `Start` symbol in the Windows task bar in order to open the `Start` menu.
2. Select the `Programs` option in the `Start` menu to open the `Programs` folder.
3. Select `Wago*` to open the `Wago*` folder.
4. Select `WAGO-IO-CHECK*` in order to open the `WAGO-IO-CHECK*` folder.
5. Click on the `WAGO-IO-CHECK` link.

* or the name you have selected

## „Desktop“ - Windows Explorer

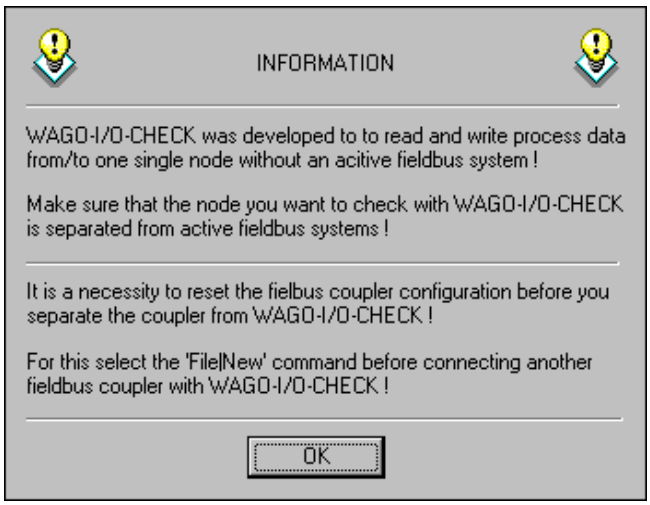
**WAGO-I/O-*CHECK*** can be started with the „Desktop“ symbol or the Windows Explorer by a double click on the *WagoCheck.exe* file in the „WAGO-IO-CHECK“ folder or by labelling the file and pressing the < Enter* > key. The *WagoCheck.exe* file is on the drive and in the folder which you have entered at the time of installation. If you have not changed the default settings when installing, the *WagoCheck.exe* file is in the folder,

*C:\Programme\Wago\WAGO-IO-CHECK*

* or CR, ↵

The following start screen appears after starting:

Carefully read the following important information and confirm by clicking on the OK button!


INFORMATION
WAGO-I/O-CHECK was developed to to read and write process data from/to one single node without an acitive fieldbus system !
Make sure that the node you want to check with WAGO-I/O-CHECK is separated from active fieldbus systems !
It is a necessity to reset the fielbus coupler configuration before you separate the coupler from WAGO-I/O-CHECK !
For this select the 'File|New' command before connecting another fieldbus coupler with WAGO-I/O-CHECK !
OK

# Operation

### *Menu Bar*

**WAGO-I/O-*CHECK*** contains the following main menus:

## File Menu

### New

Use this command to logoff the node currently used and to initialise a new node.

To determine the denominations of the I/O modules of the connected node, use the `Get node configuration` statement from the connection menu.

**Shortcuts**

| | |
|---|---|
| Toolbar: | |
| Keyboard: | < Ctrl > + < N > |

## Open

Use this statement to open a saved node description.

**Shortcuts**

Toolbar:

Keyboard: < Ctrl > + < O >

The following options allow you to enter the node description to be opened:

**Look in**

Select the drive and the folder in which **WAGO-I/O-*CHECK*** has saved the node description which you want to open.

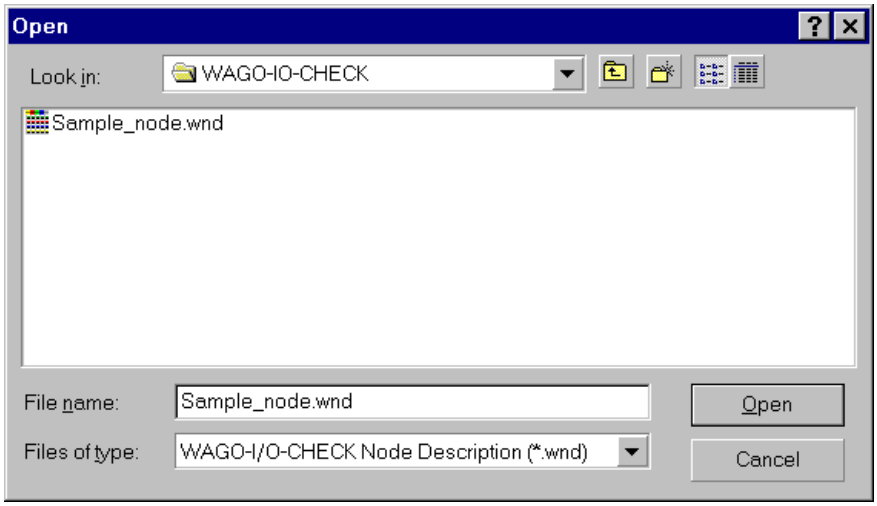
**File name**

Enter the file name or select the name from the list. This field only shows files which correspond to the file extension you selected in the "File type" field.

**Files of type**

Select the type of file to be opened:

**WAGO-I/O-*CHECK*** node description (**.wnd*)



## Save

Use this command to save the active document under its current name and directory. With the first saving of a document **WAGO-I/O-*CHECK*** displays the dialog `Save` so that you can name your document.

**Shortcuts**

Toolbar:

Keyboard: < Ctrl > + < S >

## Save As

Use this command to name and save the opened node description. For this **WAGO-I/O-*CHECK*** shows the dialog box `Save As`.

The following options permit you to enter the name and location of the node description which you want to save:

**Save in**

Select the drive and the folder in which you want to save the node description.

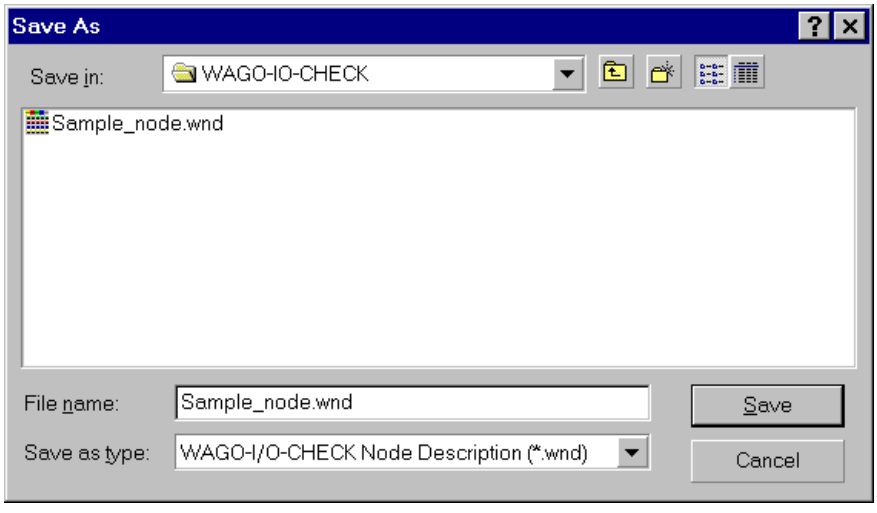
**File name**

Enter a new file name for the node description, so that the file can be saved under a different name. **WAGO-I/O-*CHECK*** adds an extension to the name you have assigned in the *File type* field.

**Save as type**

Select the type of file to be saved:

**WAGO-I/O-*CHECK*** node description (*.*wnd*)



## Print

Use this command to print the node description. The print dialog box appears when selecting this command. Use this dialog box to select the page area to be printed, the printer to be used and other options for printer setting can be selected.

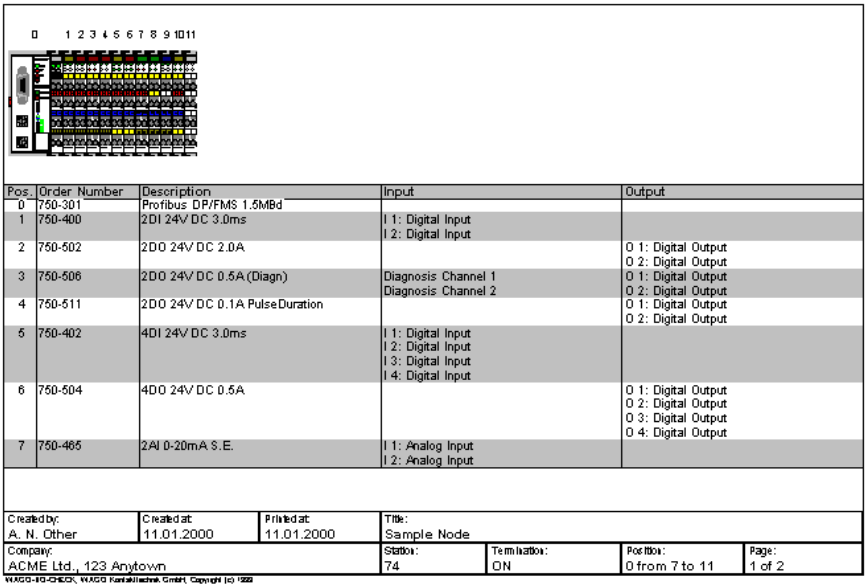
In addition to the node the print out also includes a list of the connected components with their descriptions.

**Shortcuts**

Toolbar:

Keyboard: < Ctrl > + < P >

**Note:** The print out was optimised for DIN A4 in landscape format. For an optimum print out do not change these settings!



0 1 2 3 4 5 6 7 8 9 10 11

| Pos. | Order Number | Description | Input | Output |
|---|---|---|---|---|
| 0 | 750-301 | Profibus DP/FMS 1.5MBd | | |
| 1 | 750-400 | 2DI 24V DC 3.0ms | I 1: Digital Input<br>I 2: Digital Input | |
| 2 | 750-502 | 2DO 24V DC 2.0A | | O 1: Digital Output<br>O 2: Digital Output |
| 3 | 750-506 | 2DO 24V DC 0.5A (Diagn) | Diagnosis Channel 1<br>Diagnosis Channel 2 | O 1: Digital Output<br>O 2: Digital Output |
| 4 | 750-511 | 2DO 24V DC 0.1A PulseDuration | | O 1: Digital Output<br>O 2: Digital Output |
| 5 | 750-402 | 4DI 24V DC 3.0ms | I 1: Digital Input<br>I 2: Digital Input<br>I 3: Digital Input<br>I 4: Digital Input | |
| 6 | 750-504 | 4DO 24V DC 0.5A | | O 1: Digital Output<br>O 2: Digital Output<br>O 3: Digital Output<br>O 4: Digital Output |
| 7 | 750-465 | 2AI 0-20mA S.E. | I 1: Analog Input<br>I 2: Analog Input | |

| Created by: | Created at: | Printed at: | Title: | | | |
|---|---|---|---|---|---|---|
| A. N. Other | 11.01.2000 | 11.01.2000 | Sample Node | | | |
| Company: | | | Station: | Termination: | Position: | Page: |
| ACME Ltd., 123 Anytown | | | 74 | ON | 0 from 7 to 11 | 1 of 2 |

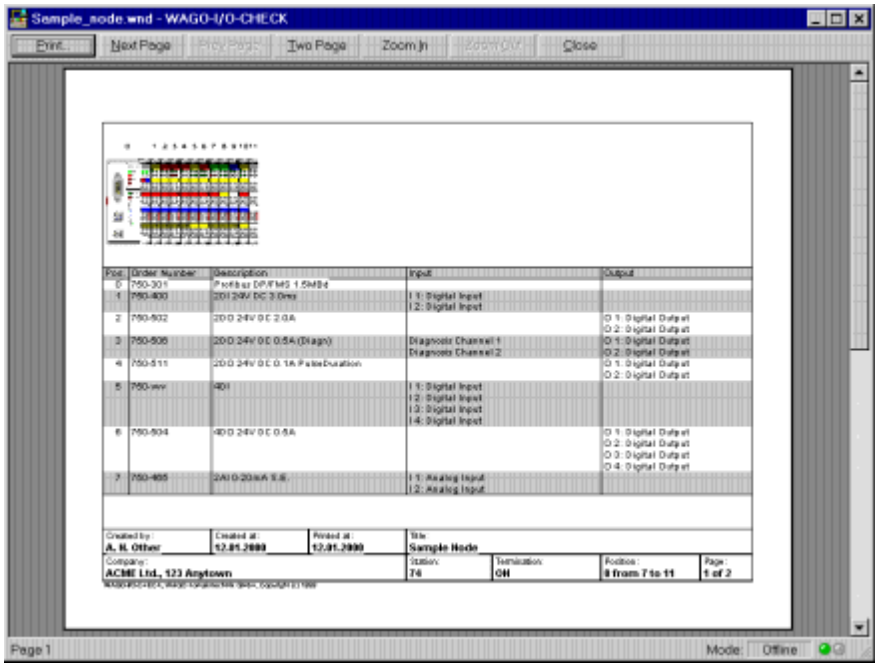
WAGO-I/O-CHECK, WAGO Kontakttechnik GmbH, Copyright (c) 1999

## Print Preview

Use this command to display the nodes and the list of I/O modules used in the same manner as they will be printed. When selecting this command the main window is replaced by a print preview window in which one or two pages are shown in print format. The toolbar of the print preview allows you to lay down whether one or two pages are to be displayed simultaneously. In addition, you can scroll up and down in a document, zoom in or out or start a print job.

**Shortcut**

Toolbar:




## Print Setup

Use this command to define the printer and printer connection. The dialog box **Print setup** appears after selecting the command. Use this dialog box to define the printer and its connections.

## Properties

Use this command to display the node properties.

When selecting this command the dialog box **Node info** appears in which you can enter a node name, station address and your company.

### *Property Sheet 'File Info'*

The following options in the property sheet 'File Info' provides information about the saved file.

**Symbol / file name**

Shows the symbol and the file name of the node description.

**Type**

Identifies the file type.

**Folder**

Name of the drive and folder in which the file is saved.

**Size**

File size.

**Created**

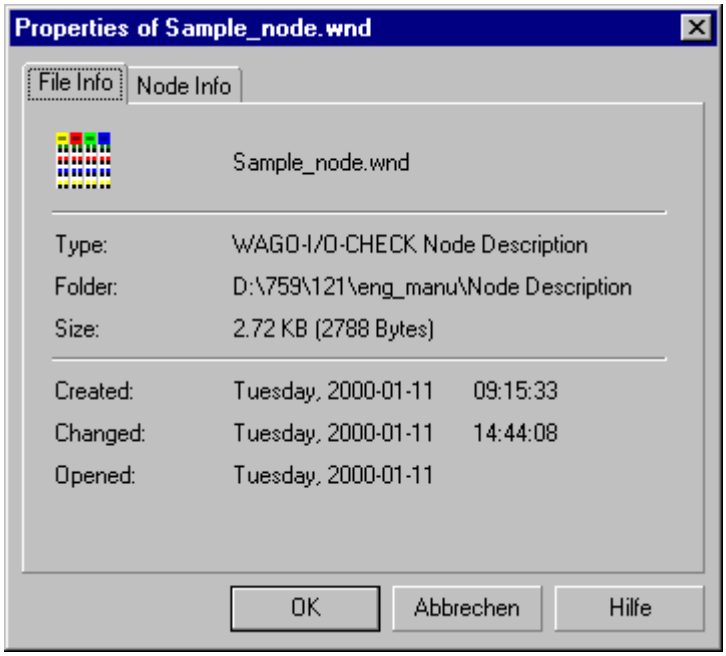
Date and time for which the file was opened for the first time on this computer.

**Changed**

Date and time when the file was last saved.

**Opened**

Date and time when the file was last opened.



## *Property Sheet 'Node Info'*

The following options in the property sheet 'Node Info' permit entering a more detailed node: description

**Title**

Enter the node name. The name is entered in the title line of the page. The title may deviate from the file name of the node description.

**Station**

Enter the station address or node subscriber. This information is entered in the print out title line.

**With Profibus couplers the setting of the coupler address selection switches is shown. Do not change this value!**

**Termination (on/off)**

Activate this checkbox if the node shown is the last node in your fieldbus system and the termination is made on the hardware side. This setting is entered on the headline of the print out.

**Author**

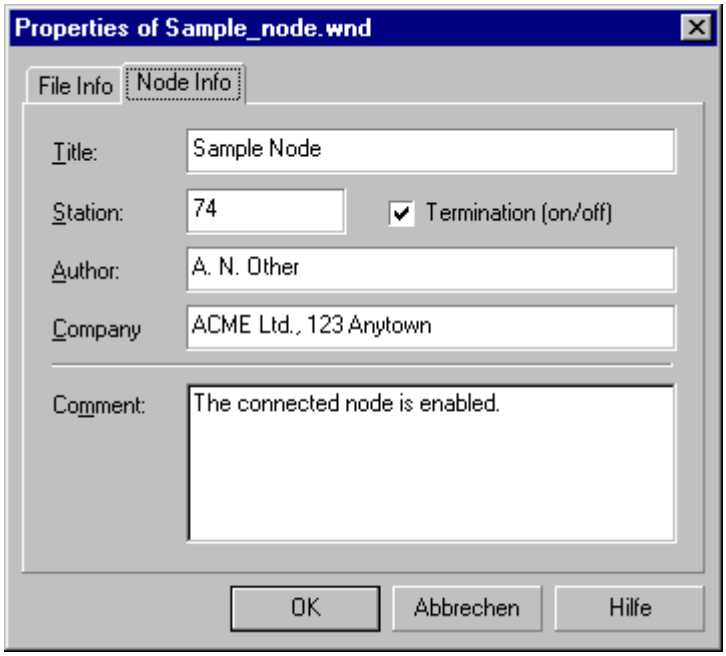
To change the name of the author delete the existing name enter a new one. The name is entered in the headline of the print out.

**Company**

Enter the name of your company. The company name is entered in the I/O module list when printing out the headline.

**Comments**

Enters an additional node comment. This comment is not printed.



## Recent File

List of the last node descriptions  processed.

## Exit

Use this command to exit from **WAGO-I/O-*CHECK***. As an alternative you can choose the command `Close` from the system menu. **WAGO-I/O-*CHECK*** asks if you want to save files with changes not yet saved.

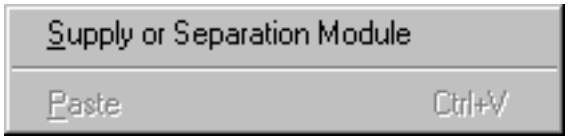
**Shortcuts**

| | |
|---|---|
| Mouse: | Click on the `Close` button in the title bar. |
| | |
| Keyboard: | < Alt > + < F4 > |

# Edit Menu

The commands `Undo`, `Copy`, `Delete`, `Replace`, `Goto` and `Properties` are not available in this version.

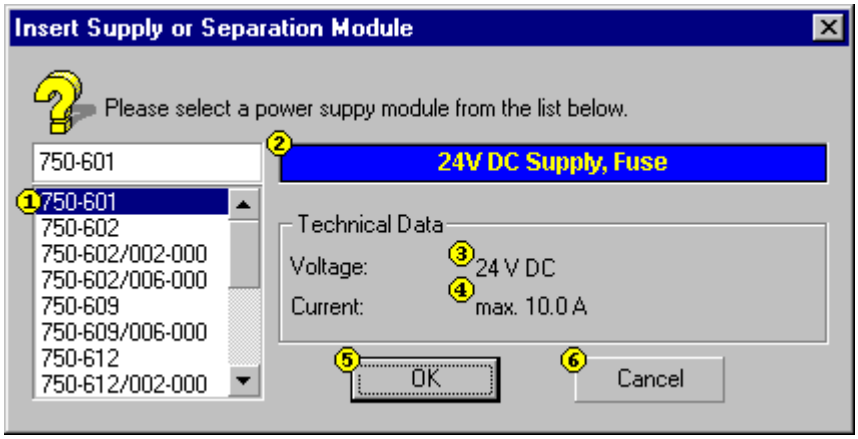
## Insert



## Insert Supply or Separation Module

The following dialog elements permit the insertion of a supply or separation module in the view of a node:

A coupler does not recognise passive I/O modules. To display a node with **WAGO-I/O-*CHECK*** it may also be helpful to subsequently insert an existing passive I/O module in the graphic.




**Selection list**

Select an I/O module from the list using the order number.

**Description**

Shows the description of the selected I/O module.

**Voltage**

Level of the supply potential to be fed

**Current via contacts**

Maximum current, permitted to flow through the supply module

**OK**

Ends the dialog and inserts the selected I/O module into the graphic

**Cancel**

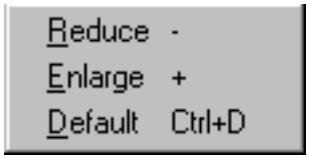
Ends the dialog without inserting an I/O module

## Paste

The `Paste` command is not included in this version.

# View Menu

## Zoom




## Reduce

Use this command to reduce the node display size.

**Shortcuts**

Toolbar:

Keyboard: < - > on the number block

## Enlarge

Use this command to enlarge the node display size.

**Shortcuts**

Toolbar:

Keyboard: < + > on the number block

## Default

Use this command to display the node on the screen in its original size.

**Shortcuts**

Toolbar:

Keyboard: < Ctrl > + < D >

## Toolbars

The toolbars contain buttons allowing you a fast access to a large number of commands and functions of **WAGO-I/O-*CHECK***. When pointing with the mouse on the button the corresponding name appears.

### *Standard Toolbar*

The **Standard** toolbar contains the following buttons:

| Button | Action |
|---|---|
| | Close the node currently being used and initialise the new node. |
| | Shows the **Open** dialog box. |
| | Saves the opened node under its file name. If the file does not already have a name **WAGO-I/O-*CHECK*** shows the dialog box **Save As**. |
| | Prints the node shown. |
| | Shows a print preview with the nodes and a list of the I/O modules. |
| | Shows the mouse cursor for the context help. |

## *Communication Toolbar*

The **Communication** toolbar contains the following buttons:

| Button | Action |
|---|---|
| | Reads out the designation of the I/O module of the connected node. |
| | Performs diagnosis of the coupler error code. |
| | Creates an Online connection to the coupler. |
| | Takes the coupler connection offline. |

## *Zoom Toolbar*

The **Zoom** toolbar contains the following buttons:

| Button | Action |
|---|---|
| | Reduces the screen display. |
| | Enlarges the screen display. |
| | Sets the screen display back to the default size. |

### *I/O Module Information Toolbar*

The **I/O Module Information** toolbar contains the following elements:

| Element | Action |
|---|---|
| 1 | This drop down field shows the position of the selected I/O module and by selecting a position number allows a quick change to a different I/O module. |
| 2 | This drop down field provides a description of the selected I/O module and permits a quick change to a different I/O module by selecting a description. |
| 3 | This drop down field shows the order number of the selected I/O module and permits a quick change to a different I/O module by selecting an order number. |

Toolbars can be relocated and toggled on and off.

### *Moving Toolbars*

**1** Click on the handle of an docked toolbar or on the title bar of an undocked toolbar.

**2** Pull the toolbar to the required location. The toolbar is docked when pulling over the edge of the user window.

### *Docked Toolbar*

A toolbar docked to one side of the program window. A toolbar can be docked at the left, right or bottom edge of the program window under the title bar. The toolbar is docked to the edge of the screen if you pull a toolbar to the edge of the program window.

### *Undocked Toolbar*

A toolbar which is not docked to the edge of the program window. The toolbar is docked to the edge of the screen when the toolbar is pulled to the screen edge.

### *Toggling on or off the Toolbar*

**WAGO-I/O-*CHECK*** provides the following options for toggling on and off a toolbar:

**1** Click on a toolbar with the right hand mouse key. A context menu appears with the existing toolbars. Select the toolbar which you want to toggle on or off from this list. Once the toolbar is toggled on the corresponding menu entry is checked.

**2** Select the option `Toolbars` from the `View` menu. A menu listing the available toolbars is shown. Select the toolbar which you want toggle on or off from this list. When the toolbar is toggled on, a check appears next to the corresponding menu entry.

**3** To toggle off an undocked toolbar it is possible to click on the symbol in the toolbar title bar.

## *Status Bar*

The status bar is shown at the bottom edge of the **WAGO-I/O-*CHECK*** window. The status bar can be toggled on or off in the menu `View|Toolbars` using the `Status Bar` command.

**1** As you move the DIRECTION KEYS by menus, the left hand area of the status bar describes the function of the menu entries. In the same manner this area also describes the effect of the toolbar buttons if these are pressed and held. Release the mouse key when the mouse pointer is no longer on the button if you do not want to perform the command associated with a toolbar button after reading its description.

**2** During certain program actions a description of the action and a progress display showing the performance of the action appears in the left hand section of the status bar:

**3** The right hand area of the status bar shows the state of the connection to the coupler:

| Display | Description |
|---|---|
| **Offline** | No data exchange with the coupler takes place. |
| **Online** | **WAGO-I/O-*CHECK*** cyclically reads the process data of the connected node. |

**In this case do not cut the connection !**

The light diodes in the right hand section of the status bar have the following meaning:

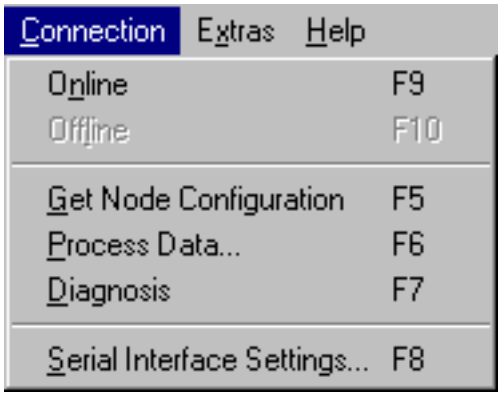
When both light diodes are switched off (grey), neither a node is read out nor a data exchange performed between **WAGO-I/O-*CHECK*** and the coupler.

| Green LED | Description |
|---|---|
| **ON** | The order number of the I/O modules was successfully read out of the coupler. |
| **FLASHING** | The coupler connection is active. |

**In this case do not cut the connection !**

| Red LED | Description |
|---|---|
| **ON** | The order numbers of the I/O modules could not be read out of the coupler. |
| **FLASHING** | An active connection to the coupler was interrupted without the coupler being reset. |

# Connection Menu




## Online

Use this command to start the communication with the coupler, after having determined its configuration with the `Connection|Get Node Configuration` command.

To display the data dialog box select an I/O module and then use the `Connection|Process Data` command.

**Do not simultaneously operate WAGO-I/O-CHECK with an active fieldbus system! For this reason ensure that the node connected to the PC does not communicate with a fieldbus!**

**Shortcuts**

Toolbar:

Keyboard: < F9 >

## Offline

Use this command to stop the communication with the fieldbus coupler.

**Note:** If necessary this command closes all data dialog boxes still open.

**Shortcuts**

Toolbar:

Keyboard: < F10 >

**Never interrupt the connection between the PC and the nodes prior to stopping the communication with `Connection|Offline`!**

## Get Node Configuration

Use this command to read out the designations of the I/O modules of the connected node after starting **WAGO-I/O-*CHECK*** or after selecting the `File|New`. menu

The types of I/O modules are automatically recognised by **WAGO-I/O-*CHECK*** when reading out the node. Digital I/O modules must be specified by the user. For this the dialog box **Select digital** I/O modules for each digital I/O module.

The display of the node on the screen is made as a tree structure in the left hand side and as a graphic on the right hand side.

**Shortcuts**

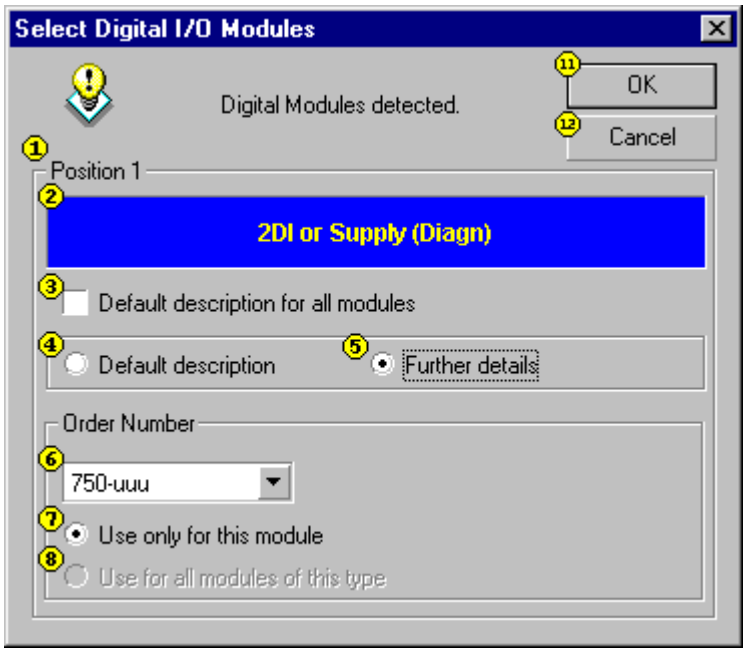
Toolbar:

Keyboard: < F5 >

**Note:** A coupler cannot recognise passive I/O module. For the display of a node, with **WAGO-I/O-*CHECK*** however, it may be helpful to subsequently insert an existing passive I/O module in the graphic. For this use the option `Insert power supply module or distance module` from the `Edit|Insert` menu.

## Selecting Digital I/O Module*s*

In a coupler only the information about the type (input/output) and the number of inputs/outputs of the I/O module is saved for digital I/O modules. **WAGO-I/O-*CHECK*** recognises this information and offers the possibility to more precisely describe the I/O modules using this dialog box. The selection list only contains I/O modules which are suitable for the displayed position.




1 **Position**

Shows the position of the recognised digital I/O module [1 ... 64].

2 **Description**

Shows the description of the I/O module. First only the information is shown which **WAGO-I/O-*CHECK*** has determined based on the data from the coupler.

3 **General description for all modules**

Click this checkbox if you do not want to select any description from the displayed and the following I/O modules. This dialog box is no longer displayed for any further existing digital I/O modules. In this case **WAGO-I/O-*CHECK*** uses the corresponding default description for all digital I/O modules.

4 **Default description**

Select this radio button if you only want to use the default description for the displayed I/O module. The dialog box is shown for the next digital I/O module.

⑤ **Further details**

Select this radio button if you want to use a detailed description for the I/O module shown. The dialog elements for the selection of the detailed description are activated. The dialog box is shown again for the next digital I/O module.

⑥ **Order number**

Select the drop down field for the order number of the I/O module (e.g. as printed on I/O module). The I/O module description is shown in the description field.

⑦ **Use only for this module**

Select this radio button if you want to use the detailed description only for the displayed I/O module (currently the only option).

⑧ **Use for all modules of this type**

Select this radio button if you want to use the detailed description for all I/O modules in the node, which conform to the displayed I/O module type (currently not available).

**Binary spacer module**

If a binary spacer module is present in a node, an additional I/O module is shown for each two reserved inputs and outputs. The dialog box **Select digital** I/O modules allows a specification of the types of these I/O modules.

## Process Data

Use this command to display the process data of a selected I/O module.

**Shortcuts**

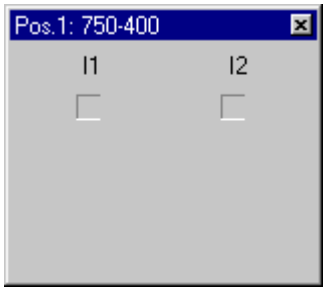
| | |
|---|---|
| Mouse: | Double click on the I/O module for which you want to display the process data. |
| Keyboard: | < F6 > or<br><br>Select the I/O module using the keys<br><br>< Ctrl > + < Right arrow key > or<br>< Ctrl > + < Left arrow key ><br><br>or the mouse, and press the key < Enter > when the required I/O module is reached. |

**Note:** This command is not available when no node was read out or no node description opened.

### *'Process Data' dialog box*

The following dialog box is available for visualising the process data:

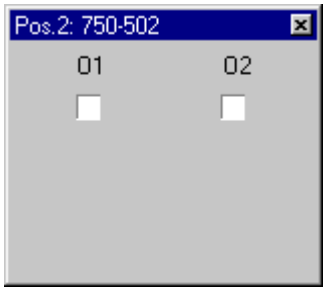
#### 2 Channel Digital Input




- The position of the selected I/O module and its order number are shown at the title bar.
- The checkboxes indicate the states of the individual digital inputs. When an input is set, a check mark appears in the attendant checkbox.

**Note:** The states of the digital inputs are also displayed in the pictorial representation of the node by coloured light diodes.

## 2 Channel Digital Output




- The position of the selected I/O module and its order number are shown at the title bar.
- The checkboxes indicate the states of the individual digital outputs. When the output is set a check mark appears in the attendant checkbox.

The following options are available to set or reset the outputs available:

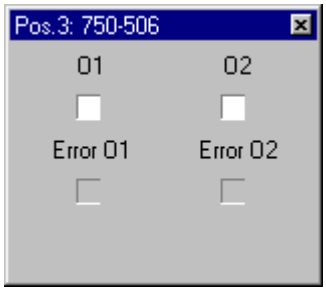
- Click with the mouse in the corresponding checkbox.
- Select the corresponding checkbox using the key < Tab >. Using the < Spacebar > you can now set or reset the attendant output.

**Both actions directly affect the process image of the node! This means that the attendant output is set as soon as the checkbox is clicked. To reset click on the checkbox again.**

**With WAGO-I/O-*CHECK* manually set outputs (e.g. for motor contactors or valves) which remain set until they are manual reset.**
**Please note that in this case switching off on the software side, e.g. with limit switches, is ineffective!**

**Note:** The states of the digital outputs are shown in the pictorial display by coloured light diodes. To change theses states click in the node picture on the coloured light diodes.

## 2 Channel Digital Output with Diagnosis




- The position of the selected I/O module and its order number are shown at the title bar.
- The checkbox indicates the states of the individual digital outputs and its diagnosis outputs. Once the output/input is set a check mark appears in the attendant checkbox.

The following options are available for setting or resetting outputs:

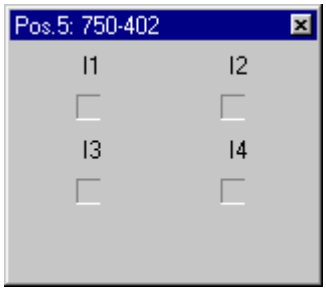
- Click with the mouse in the corresponding checkboxes.
- Select the corresponding checkboxes using the < Tab > key. The attendant output can be set or reset using the < Spacebar >.

**Both actions directly effect the process image of the node! This means that the attendant output is set as soon as the checkbox is clicked. To reset click on the checkbox again.**

**With WAGO-I/O-*CHECK* manually set outputs (e.g. for motor contactors or valves) which remain set until they are manual reset.**
**Please note that in this case switching off on the software side, e.g. with limit switches, is ineffective!**

**Note:** The states of the digital outputs are shown in the pictorial display of the node by coloured light diodes. To change these states click in the node picture on the coloured light diodes.

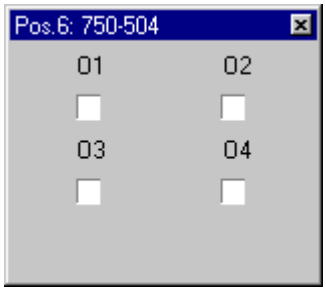
## 4 Channel Digital Input




- The position of the selected I/O module and its order number are shown at the title bar.
- The checkboxes indicate the states of the individual digital inputs. Once the input is set a check mark appears in the attendant checkbox

**Note:** The states of the digital inputs are shown in the pictorial display of the node by coloured light diodes.

## 4 Channel Digital Output




- The position of the selected I/O module and its order number is shown at the title bar.
- The checkboxes indicate the states of the individual digital outputs. Once an output is set a check mark appears in the attendant checkbox.

The following options are available for setting or resetting outputs:

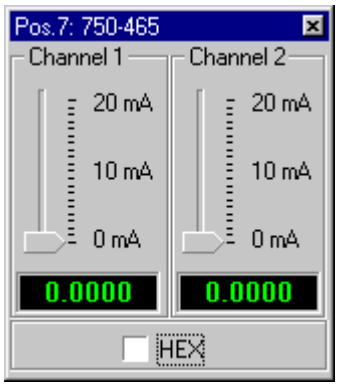
- Click with the mouse in the corresponding checkbox.
- Select the corresponding checkbox using the key < Tab >. The attendant output can be set or reset using the < Spacebar >.

**Both actions directly effect the process image of the node! This means that the attendant output is set as soon as the checkbox is clicked. To reset click on the checkbox again.**

**With WAGO-I/O-*CHECK* manually set outputs (e.g. for motor contactors or valves) which remain set until they are manual reset.**
**Please note that in this case switching off on the software side, e.g. with limit switches, is ineffective!**

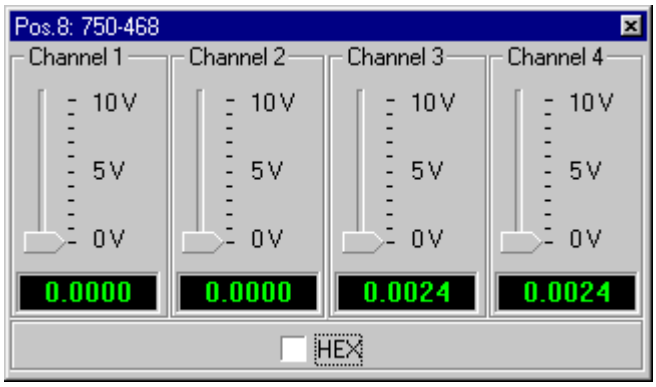
**Note:** The states of the digital outputs are shown in the pictorial display of the node by coloured light diodes. To change these states click in the node picture on the coloured light diodes.

## 2 Channel Analog Input



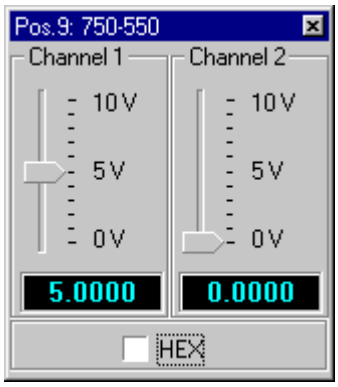

- The position of the selected I/O module and its order number are shown at the title bar.
- The displays show the individual analog value in milliamps or volts.
- The sliders show the position of the value within the measuring limits of the I/O module.
- Use the checkbox “HEX” to toggle between a hexadecimal and a decimal view (milliamps, volts) of the process data.

## 4 Channel Analog Input




- The position of the selected I/O module and its order number are shown in the title bar.
- The displays indicate the individual analog value.
- The sliders show the position of the value within the measuring limits of the I/O module.
- Use the checkbox “HEX” to toggle between a hexadecimal and a decimal view (milliamps, volts) of the process data.

## 2 Channel Analog Output




- The position of the selected I/O module and its order number are shown at the title bar.
- The edit controls show the last set analog value in milliamps or in volts. Enter the value here which the attendant module at your output should show.

**Note:** The new value is sent to the node first when pressing the < Enter* > key.

* or CR, ↵

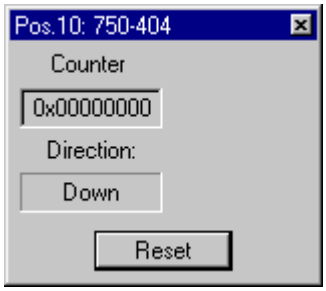
- The output value can also be changed using the sliders

**These actions directly affect the node process display! This means: As soon as the slider position is changed the data is sent to the node. However, under certain circumstances the slider will not display the new value immediately.**

- Use the checkbox “HEX” to toggle between a hexadecimal and a decimal view (milliamps, volts) of the process data.

**Note:** If a hexadecimal value greater than 7FFF is entered for an analog output, a fault message appears and the original value is retained.

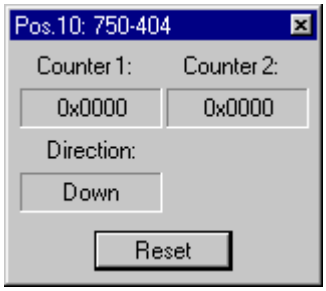
### Up/Down Counter (1x32 Bit)




- The position of the selected I/O module and its order number are shown at the title bar.
- The display fields show the current counter reading and the count direction or status (gated) of the counter.
- Using the `Reset` button the counter can be zeroed.

**Note:** The counter reading is given as a hexadecimal value.

### Up/Down Counter (2 x 16 Bit)




(Version 000-005)

- The position of the selected I/O module and its order number are shown at the title bar.
- The display fields show the current counter readings and the count direction.
- Using the `Reset` button the counters can be zeroed.

**Note:** The counter reading is given as a hexadecimal value.

## Diagnosis

Use this command to evaluate the coupler error codes, which is also signalled by the light diode I/O ERR on the coupler.

This command can also be performed without the node being read out in advance.

The evaluation of error code can, under certain circumstances, take several seconds.

**Shortcuts**

Toolbar:


Keyboard: < F7 >

The following messages are shown depending upon the error code:

| Message | Cause |
|---|---|
| *No error* | No error occurred |
| *Coupler error* | Error coupler |
| *Module error (I/O): Module at position 'xy'* | xy indicates the I/O module position at which the error has been encountered at the input/outputs |
| *Terminal bus error:* | |
| *-Command error* | An I/O module could not perform a command |
| *-Data error or interruption behind the fieldbus coupler* | The coupler could not transfer data to an internal bus. Possibly the internal bus is interrupted after the coupler |
| *-Interruption next to module at position 'xy'* | The internal bus is interrupted after the I/O module at position xy |
| *-Error during communication with module at position 'xy'* | A fault has occurred during communication with the I/O module at position xy |

**Note:** If a fault has occurred in the node, the `error code` command is to be performed after the start of **WAGO-I/O-*CHECK*** without the node being read out in advance.

## Serial Interface Settings

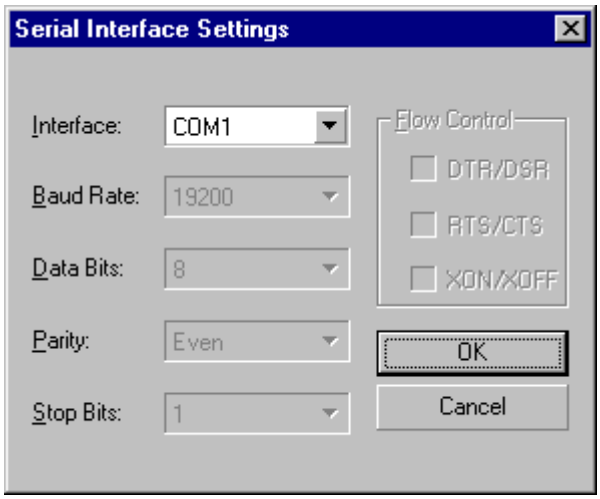
Use this command to select a serial PC interface for communication with the coupler. All other settings (baud rate, data bits, parity, stop bits and flow control) are set as defaults for communication with the **WAGO-I/O-SYSTEM *750*** and cannot be changed.

**WAGO-I/O-*CHECK*** shows the **Serial Interface Settings** dialog box, in which you can make the required settings.

**Shortcut**

Keyboard: < F8 >

To set the **WAGO-I/O-*CHECK*** serial interface, select an interface from the attendant drop down list.



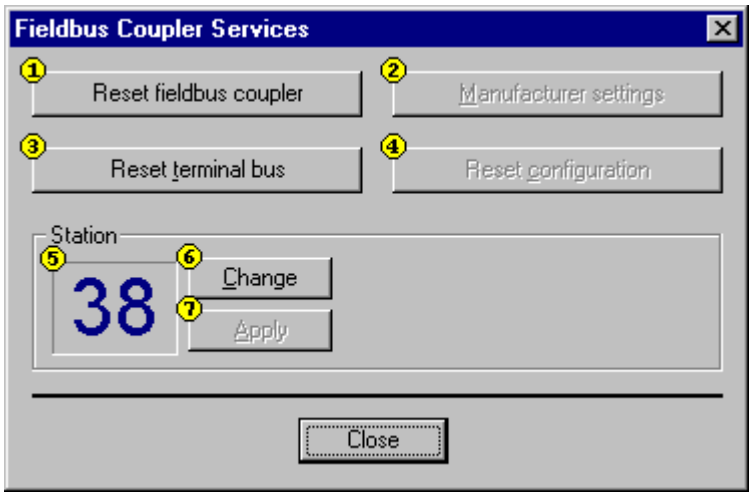
# Extras Menu

## Fieldbus Coupler Services

Use this command to trigger special defined functions in the coupler.

**Shortcut**

Keyboard: < F4 >




1 **Reset fieldbus coupler**

Triggers a software reset in the coupler.

**With a software reset all digital outputs are reset and the analog outputs are set to the minimum value!**

2 **Manufacturer settings** (currently not available)

Sets the original parameters of the coupler.

3 **Reset terminal bus**

Causes the coupler to trigger an internal bus reset.

**With internal bus reset all digital outputs are reset and the analog outputs set to the minimum value!**

④ **Reset configuration**

Represents the configuration of the coupler, which was active prior to the communication with **WAGO-I/O-*CHECK***.

This button can only be selected when the communication has not been correctly terminated, e.g. in the case of a cable breakage or a power loss during communication.

**The following buttons and displays are only visible for PROFIBUS couplers.**

⑤ **Station**

This field shows the current station address setting of a PROFIBUS coupler, as set with the address selection switch on the coupling housing.

⑥ **Change station**

This button starts the selection of a station address for the coupler. You can now set the required address using the address selection switches. The coupler transmits the set address to **WAGO-I/O-*CHECK*** until you adopt the displayed value using the **Apply** button.

⑦ **Apply station**

Using this button the selection of a station address is concluded. The value is displayed in **WAGO-I/O-*CHECK*** and taken over by the coupler.

**Note:** Once this button is actuated a software reset is triggered in the coupler to take over the new station address in the coupler.

# Help Menu

## Help Topics

Use this command to display the help list of contents. From this mask you can change (go) into topics which will explain the use of **WAGO-I/O-*CHECK*** step by step.

As soon as help is opened it is always possible to click the **contents** button and return to the list of contents.

## Help Index

Use this command to display the help list of contents. From this mask you can change to topics which explain the use of **WAGO-I/O-*CHECK*** step by step.

## Context Help

Use this command to receive help about a certain part of **WAGO-I/O-*CHECK***. When the "Context help" button is selected in the toolbar the mouse pointer changes to an arrow with a question mark. Click at any point in the **WAGO-I/O-*CHECK*** window, for example on a button in the toolbar. The help topic covering the clicked element will appear.

**Shortcut**

| | |
|---|---|
| Toolbar: | |
| Keyboard: | < Shift > + < F1 > |

## Using Help

Use this command to obtain general instructions for the use of help.

## Info

Use this command to display the copyright information and the version number of your copy of **WAGO-I/O-*CHECK***.

# Function Keys and Key Combinations

| Function keys/ key combinations | Menu / Function |
|---|---|
| < Ctrl > + < N > | `File\|New` |
| < Ctrl > + < O > | `File\|Open` |
| < Ctrl > + < S > | `File\|Save` |
| < Ctrl > + < P > | `File\|Print` |
| < Alt > + < F4 > | `File\|Exit` |
| < - > (Number pad) | `Reduce` |
| < + > (Number pad) | `Enlarge` |
| < Ctrl > + < D > | Default size |
| < Shift > + < F1 > | Context help |
| < F4 > | `Extras\|Fieldbus coupler services` |
| < F5 > | `Connection\|Get node configuration` |
| < F6 > | `Connection\|Process data` |
| < F7 > | `Connection\|Diagnosis` |
| < F8 > | `Connection\|Serial interf.settings` |
| < F9 > | `Connection\|Online` |
| < F10 > | `Connection\|Offline` |
| < Ctrl > + < Right arrow > | Graphic node: Select next I/O module |
| < Ctrl > + < Left arrow > | Graphic node: Select previous I/O module |
| < Ctrl > + < Pos1 > | Graphic node: Select coupler |
| < Ctrl > + < End > | Graphic node: Select end module |
| < Ctrl > + < Down arrow > | Tree structure: Select next I/O module |
| < Ctrl > + < Up arrow > | Tree structure: Select previous I/O module |
| < Enter > or<br>< CR ><br>< ↵ > | Dialog box process data:<br>Send process data of a selected I/O module to the node |
| < Tab > or<br>< →\| > | Dialog box process data:<br>Select a checkbox |
| < Spacebar > | Dialog box process data:<br>Set / reset output |

# Node Testing with WAGO-I/O-*CHECK*

Prior to or during the start up of your node using **WAGO-I/O-*CHECK*** ensure that the following information is adhered to:

## Warning Information

- **Prior to handling the process data with WAGO-I/O-*CHECK* it is necessary to disconnect the node from the active fieldbus.**
  **Dependent upon the coupler setting, set outputs can be reset or remain set when disconnecting.**
- **Using the WAGO-I/O-*CHECK* manually set outputs (e.g. for motor contactors or valves) remain set until manually reset.**

**Take note that in both cases switching off via the software, e.g. with limit switches, is inactive!**

## Important Information

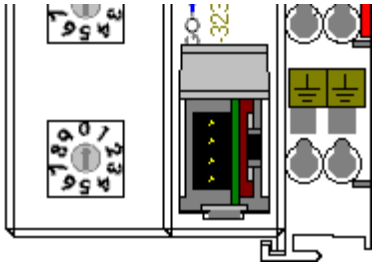
- **Prior to disconnecting a connected coupler ensure that its original configuration is reset!**
  **[Menu connections|`Offline`]**
- **Never disconnect the PC from a coupler, if WAGO-I/O-*CHECK* is in Online-condition!**
- **Only for a node with MODBUS connection:**
  **Set the coupler station switch to '00'.**
- **Only for a node with CAN connection:**
  **For couplers a COB-ID must be selected which is between 1 and 126.**
- **For the start up of a node with programmable fieldbus controller it is necessary to stop the program processing (cycle) in the controller (stop state)! For this move the slider next to the configuration interface to the middle setting.**

# Communication Connection Configuration

The following work steps are necessary to make a communication connection:

**If you also want to communicate with a node in an active fieldbus system using WAGO-I/O-*CHECK* please note that the coupler must be disconnected from the fieldbus system for the duration of the connection to WAGO-I/O-*CHECK*.**

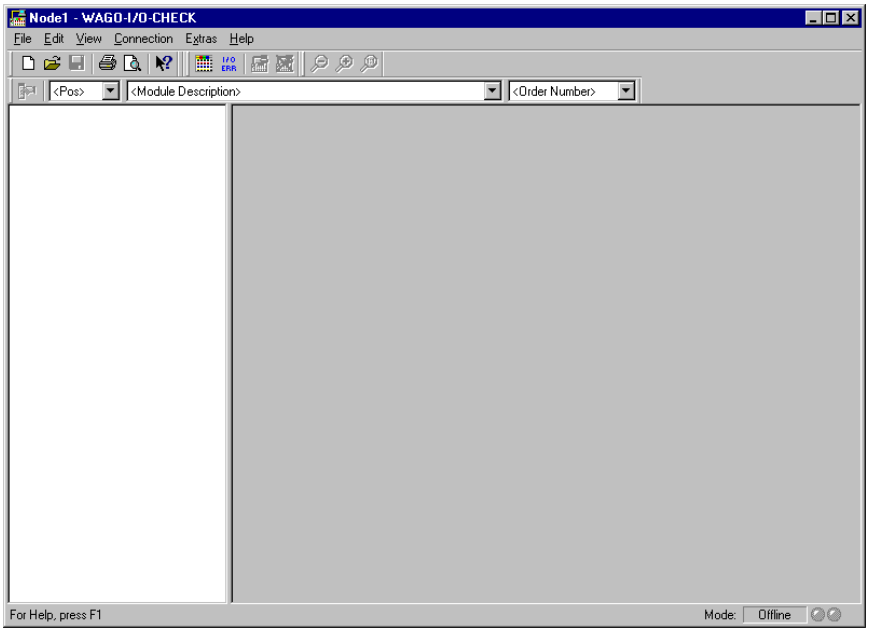
- Switch off the voltage supply of the coupler.
- Interrupt the connection to the fieldbus.
- Open the cover of the configuration interface of the coupler and connect it with the attendant plug of the communication cable.



- Connect the D-Sub plug of the communication cable to a free serial interface of the PC.
- Switch on the voltage supply of the coupler again.
- Start **WAGO-I/O-*CHECK*** and select the command `Comport` in the Connection menu.
- Select the serial interface used in the Comport options dialog box and close the dialog box with the OK button.
- **WAGO-I/O-*CHECK*** can now communicate with the node.

# Determining the Node Configuration

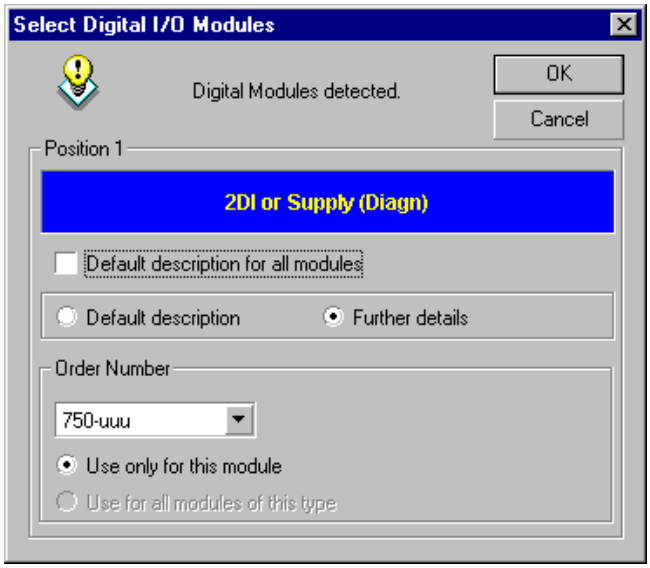
After the program start **WAGO-I/O-*CHECK*** has an empty screen view.




You can determine the node configuration in the following manner:

1. Using the command `Connection|Get node configuration`
2. Using the `Get node configuration` button in the communication toolbar
3. With the aid of the function key < F5 >

If the connected node contains digital I/O modules, you are requested to specify same.

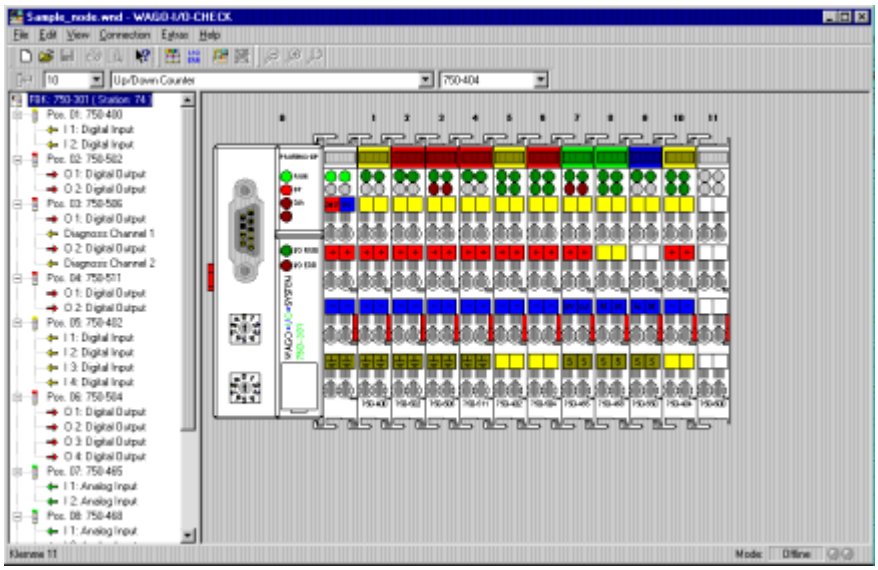


If a precise definition of the digital I/O modules is unimportant for you, select the `Default` button The dialog box **Selecting digital I/O modules** will not be displayed for any further I/O modules and the default designation will be selected for the I/O modules.

Digital I/O modules **cannot** be specified at a later date!

The types of analog I/O modules are automatically recognised by **WAGO-I/O-*CHECK*** when reading out the node.

The connected node is shown as a graphic in the right hand mask section and as a tree structure in the left hand mask section.




**Note:** Passive power supply modules and distance modules are not recognised by the bus coupler and can thus not be automatically shown in **WAGO-I/O-*CHECK***. The system allows to manually insert these I/O modules in the graphic.

# Selecting an I/O Module

To select an I/O module, **WAGO-I/O-*CHECK*** provides the following methods:

- Click the required I/O module with the mouse.
- Select the next I/O module using the keys < Ctrl > + < right arrow >.
- Select the previous I/O module using the keys < Ctrl > + < left arrow >.
- Select the coupler using the keys < Ctrl > + < Pos1 >.
- Select the end module using the keys < Ctrl > + < End >.

**Tree view**

- Click on the entry for the required I/O module with the mouse.
- Select the next I/O module using the key < Down arrow >.
- Select the previous I/O module using the key < Up arrow >.
- Select the coupler using the key < Pos1 >.
- Select the end module using the key < End >.

**Toolbars**

- Select the required I/O module in a drop down field at the toolbar **I/O Module Information**.

# Display Process Data

The following possibilities are available to display the process data in **WAGO-I/O-*CHECK***:

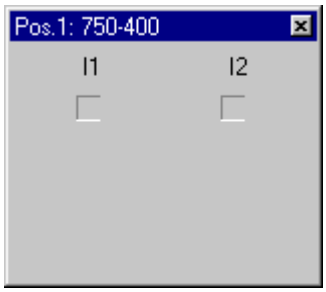
Select an I/O module and

- select the Process data command in the Connection menu
- actuate the key < F6 > or
- actuate the enter key

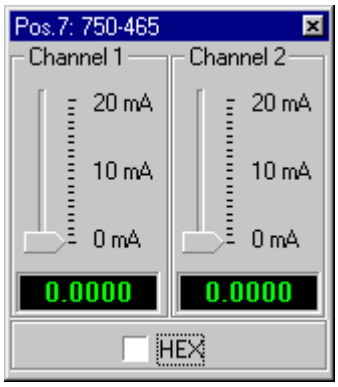
Without selecting an I/O module the process data can be displayed

- by double clicking on an I/O module or
- by double clicking on the channel of an I/O module in the tree structure

Once one of these functions has been executed a dialog box appears with a checkbox for each channel of the selected I/O module. The checkboxes indicate the states of the individual digital inputs or outputs. If an input or an output is set a check mark appears in the attendant checkbox. For analog inputs or outputs the set values are displayed by the position of the slider and shown in display fields.




Example: digital inputs




Example: analog inputs

The states of the digital inputs and outputs are also shown in the picture section of the node by coloured LED's.

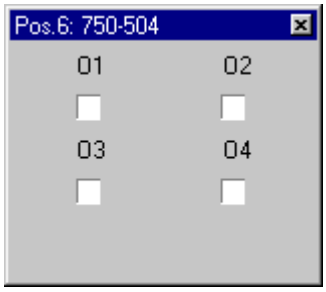
The dialog box always appear at the same position on the screen. To display the process data of several I/O modules, the dialog boxes can therefore be moved with the mouse.

# Setting Outputs

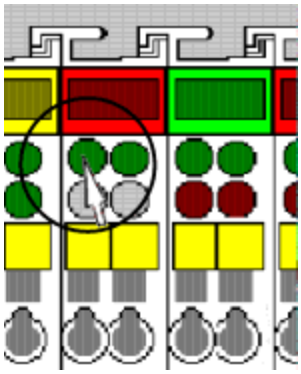
## Digital Outputs

To set or reset digital outputs in **WAGO-I/O-*CHECK*** the following alternatives are available:

- Display the process data of an I/O module as previously described.
  - Click in the corresponding checkbox with the mouse or
  - Select the corresponding checkbox using the < Tab > key. Using the < Spacebar > you can now set or reset the attendant output.



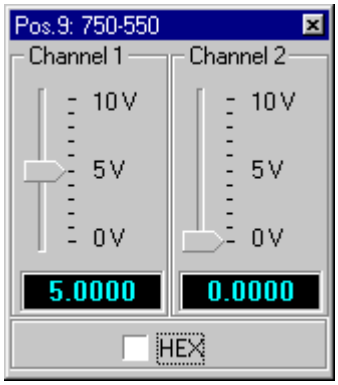

- To change the states of the digital outputs you can also click on the node pictorial display directly on the coloured LED's (see next illustration).



**The above mentioned actions act directly on the process image of the node! This means that the attendant output is set as soon as you click in a checkbox or on a light diode. Click in the checkbox or on an LED to reset the outputs.**

**Outputs manually set with WAGO-I/O-*CHECK* (e.g. for motor contactors or valves) remain set until they are manually reset again.**
**Please note that in this case switching off via the software, e.g. with limit switches is ineffective!**

## Analog Outputs




To change the values of analog outputs the following possibilities are available:

- In the edit control enter a value in milliamps or volts, which the attendant terminal output should provide. The new value is not sent to the node until the <Enter* > key is pressed.
- * or CR, ↵

  Use the checkbox “HEX” to toggle between a hexadecimal and a decimal view (milliamps, volts) of the process data.

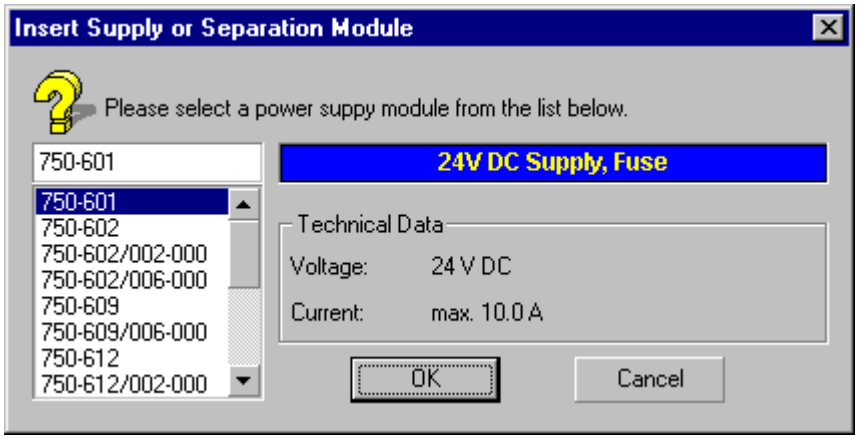
  If a hexadecimal value greater than 7FFF is entered for an analog output, a fault message is transmitted and the original value is retained.
- Use the sliders to change the output value.

**This action directly affects the process image of the node! This means that as soon as the position of the slider is changed the data is immediately sent to the node. However, under certain circumstances the new value is not displayed immediately by the slider.**

# Inserting a Supply Module or a Separation Module

Proceed as follows to insert a passive supply module or a separation module:

1. Select the I/O module, where the new I/O module is to be inserted.
2. Select `Edit/Insert` sub-menu.
3. Select the command `Insert supply module.`




4. Select an I/O module in the **Supply module** dialog box

The I/O module is inserted in the selected position in the graphic, all I/O modules from this position are displaced by one position to the right.

# Glossary

The following is an explanation of important terms of the **WAGO-I/O-SYSTEM *750*** system which are used in this manual.

## Analog input module

for 0 - 20 mA or 4 - 20 mA has the task to supply the measuring transducers located in the field and to transmit analog measuring signals, which have to be isolated, to the bus system. .

The analog input module for 0-10 V or ±10 V is used for the isolated transmission of the input signal to the system level.

## Analog output module

serves for passing on an analog signal from the automation unit to a connected actuator. The analog output modules generate signals of the standardised levels 0-20 mA, 4-20 mA, 0-10 V or ±10 V depending upon the type.

## Binary spacer module

reserves bit addresses for the inputs and outputs in a node.

## Communication cable

Connection line between PC (serial interface COM) and *fieldbus coupler* or *programmable fieldbus controller* (Configuration interface)

## Controller

Abbreviation for *programmable fieldbus controller*

## Coupler

Abbreviation for *fieldbus coupler*

## Digital input module

serves for recording the digital control signal from the field area e.g. via sensors or switches.

## Digital output module

serves for transferring a digital control signals from the automation unit to a connected actuator.

## End module

is always the last module in a *node*. It closes the *internal bus* and permits internal communication. The end module is absolutely necessary. It does not have I/O functions.

## Fieldbus coupler

(Abbreviation: coupler) represents the link between the fieldbus used and the *I/O modules*. All necessary control tasks for further operation of the I/O functions are performed by the fieldbus coupler.

## Fieldbus node

(Abbreviation: node) comprises in all cases of a *coupler* or a *Controller* as head station, a number of I/O modules and an *End module*, which forms the conclusion.

## Input module for resistance sensors

permits the direct connection of Pt and Ni resistance sensors. The connection can be made using 2 or 3 conductor technology. The linearisation over the full temperature range is realised by a micro-processor.

## Input module for thermocouples

permits the direct connection of two thermocouples. The linearisation over the full temperature range is realised by a micro-processor.

## Interface module

| | |
|---|---|
| **RS232**: | permits the connection of units with an RS232 interface to the **WAGO-I/O-SYSTEM *750***. |
| **RS485**: | permits the connection of units with an RS485 interface to the **WAGO-I/O-SYSTEM 750**. |
| **TTY**: | permits the connection of units with a 20 mA current interface. |
| **Data exchange module**: | permits the exchange of 4 (5) bytes between various fieldbus systems by multiplexers via a serial connection. |

## I/O module

serves for the input and output of process data. Corresponding to the varying requirements I/O modules for varying tasks are available. There are active and passive I/O modules.

**Active** I/O modules have a process image for inputs and/or outputs. This includes:

- *Binary spacer module*
- *Digital and analog input modules*
- *Digital and analog output modules*
- *Input modules for resistance sensors*
- *Input modules for thermocouples*
- *Interface modules*
- *I/O modules for encoders and resolvers*
- *Pulse width output modules*
- *Relay output modules*
- *Solid state relay modules*
- *Supply modules with fuse holder / diagnosis*

- *Up/Down counter*

- **Passive** I/O modules have no process image, this includes:
- *End module*
- *Potential multiplication module*
- *Separation module*
- *Supply modules* without diagnosis

## I/O module for encoders and resolvers

**Incremental encoder interface**: The module represents an interface for connecting optional incremental encoders.

**SSI generator interface**: The module represents an interface for the direct connection of an SSI generator.

## Node

Abbreviation for *fieldbus node*

## Potential multiplication module

serves for multiple power tapping of the supply voltage.

## Programmable fieldbus controller

(Abbreviation: Controller)

WAGO *fieldbus coupler* with PLC function for

- Signal pre-processing
- Defined reaction in case of fieldbus failure
- Decentral intelligence

The programmable fieldbus controller corresponds to the international standard for control programming, IEC 1131-3 or the corresponding European standard EN 61131-3, in all 5 languages: IL, LD, FBD, ST and SFC.

## Pulse width output module

serves for the modulation of 16 Bit information in the pulse width. The transmission to the field side is made isolated.

## Relay output module

is a digital output module with a relay output. Using this *I/O module* a control signal is passed from the automation unit to a connected actuator.

## Separation module

serves to spatially separate various potentials within a *node*

## Software reset

The coupler undertakes a reset and runs through its initialisation routines. All coupler tables are rebuilt. In the case of a software reset all digital outputs of a node are reset and the analog outputs are set to the minimum value (e.g. at 4-20 mA to 4 mA).

## Solid state relay module

is a digital output module with semi-conductor output. Using this *I/O module* a control signal is passed from the automation unit to a connected actuator.

## Supply module

serves to supply the I/O modules *with the individual supply potential*.

## Supply module with fuse holder / diagnosis

serves to supply the I/O modules with individual supply potential.

The power supply module is protected by a fuse. A fuse defect is signalled by an LED. To monitor the supply the module signals the status of the power supply module to the coupler by two input bits .

## Terminal bus

Internal communication between *fieldbus coupler* or *programmable fieldbus controller* and the *I/O modules*, as well as the supply for the I/O modules.

## Terminal bus reset

initialises the *internal bus* communication from the *coupler* to the plugged *I/O modules*. A test sequence is run through with varying functions (e.g.. test terminal row closed). With an terminal bus reset all digital outputs of a node are reset and the analog outputs are set to the minimum value (e.g. 4...20 mA to 4 mA).

## Up/Down counter

counts binary impulses from 24 V DC and transports the counters reading to the initialised bus system.

## WAGO-I/O-SYSTEM *750*

comprises of various components used to build modular and user specific *fieldbus nodes* for varying fieldbusses.

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